Portable Equipment Workgroup

January 31, 2003

Agenda

- Introduction
- Federal limitation on regulatory authority
- Overview of diesel PM control techniques
- Cost for diesel PM reduction
- Diesel PM reduction strategies
- Timeline

Introduction

- Diesel Exhaust is significant public health risk
  - Identified as toxic air contaminant (TAC) in 1998
  - 70% of the total ambient risk
  - Average potential cancer risk: 500 per million

Introduction (continued)

- Diesel Risk Reduction Report (2000)
  - Eleven major measures identified to reduce Diesel PM
- Develop air toxic control measure to reduce Diesel PM from existing portable engines

Introduction (continued)

- Products to be developed
  - Develop air toxic control measure (ATCM) for District adoption
  - Modify portable equipment registration program (PERP)

Definition of Portable

- Engine that is not self-propelled or intended to be propelled
- At one location less than 12 months
  - exception: seasonal sources

Portable Equipment Registration Program

- Voluntary
- Registered engines can operate statewide
- Air Quality Provisions
  - Initial emission standards
  - All engines must meet certified emission standards by 2010

Emissions Inventory (2000)

- Portable engines
  - 49,000
  - NOX emissions: 22,000 TPY
  - Diesel PM Emissions: 1,400 TPY

Federal Limitation on Regulatory Authority

- Federal preemption for nonroad engines
- Only California and U.S. EPA can adopt and enforce standards (Sec. 209 of CAA)

Federal Limitation on Regulatory Authority (continued)

- Impact on ATCM development
  - Limited regulatory authority for new engines used in farm and construction and less than 175 horsepower
    - Generators not included
  - For other classes of engines, must seek authorization from U.S. EPA Administrator

Diesel PM Control Techniques

- Available exhaust gas treatment based technologies
  - Diesel oxidation catalyst (DOC)
  - Particulate Traps
    - Catalyzed
    - Active
    - Used with fuel-borne catalyst

Diesel PM Control Techniques (continued)

- Repower
  - Replace engine with cleaner engine
  - Achieves both NOx and PM reductions
- Other options
  - Alternative fuels
  - Electrification

Catalyzed Particulate Traps

- Efficiency of 85% or more
- Conditions for success
  - Fuel with sulfur content less than 15 ppm
  - Particulate loading not too high
  - Exhaust temperatures exceed 250 degrees Celsius for 40-60% of operation

Temperature Profile Study

- Goal:
  - Temperature profiles for 150+ engines
- Study conducted by
  - CARB, Northern California
  - CE-CERT, Southern California

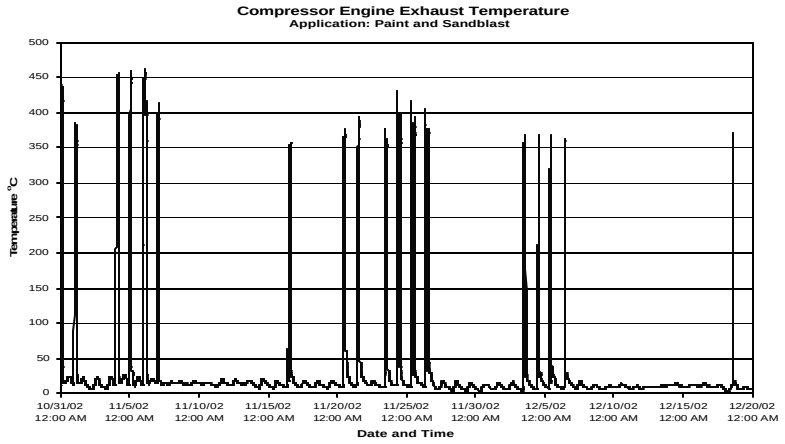
Temperature Profile Study (continued)

- Portable Diesel Engine Applications
  - Aggregate processing
  - Construction
  - Dredging
  - Government
  - Oil well servicing
  - Rental

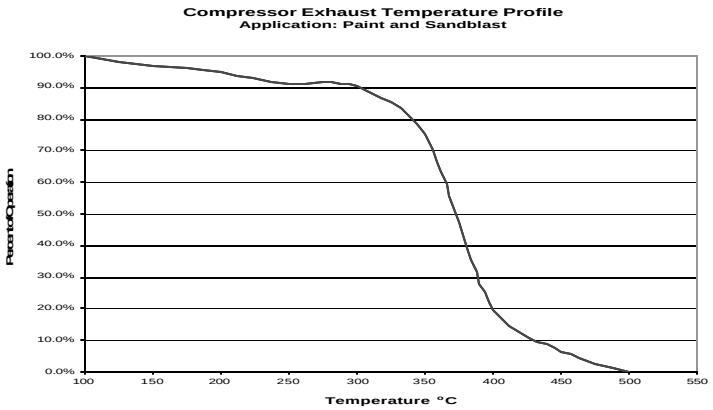
Temperature Profile Study (continued)

- Status Report
  - To be completed by early summer
  - 30+ Engines currently being profiled
  - Example of data

Temperature vs. Time



% Operation vs. Temperature



Temperature Profile Study (continued)

- Installation of data-logging equipment
  - Probe placement
  - Equipment
  - How accomplished

Temperature Profile Study (continued)

- Participation

  - Sign-up sheet
  - Additional information/questions

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Verification Program

- Uniform review and approval process for all techniques and technologies that reduce particulate emissions
  - Includes both on-road, off-road, and stationary applications
  - Fuels

Verification Program (continued)

- Verified technologies limited to:
  - onroad applications
  - newer engines
- Verified technologies
  - passive filters
  - DOC

Cost for Diesel PM Reductions

- MECA
  - Diesel Oxidation Catalyst (DOC)
    - $10-12/ HP
  - Particulate traps
    - $15/HP for truck sized engines
    - $50/HP for other sizes

Cost for Diesel PM Reductions (continued)

- Costs for installing particulate traps on stationary engines
  - Backup application (175 - 2,800 HP)
  - $22 - 49 / HP

Diesel PM Reduction Strategies

- Two approaches
  - Control-technology approach (BACT)
  - Fleet-wide approach

Control-Technology Approach

- Over period of time, all engines are equipped with appropriate control technology
- Pros and Cons
  - Based on available controls
  - Difficult to achieve Diesel PM reduction goals
  - Increased recordkeeping / reporting

Fleet-Wide Approach

- Fleet owners / operators would be given deadlines to achieve specified percentage of emission reductions of diesel PM
- Pros and Cons
  - Can obtain both diesel PM and NOX reductions
  - Owners / operators have flexibility in how emission reduction goals are achieved
  - Increased recordkeeping / reporting

Timeline

- Workgroup meetings now thru early summer
- Late summer workshop
- December Board meeting

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PERP Regulation Issues / Revisions

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